Atty Docket No. 020408-002000US

PTO FAX NO.: (703) 872-9317

ATTENTION: Examiner Justin P. Bettendorf Group Art Unit 2817
TELEPHONE NO.: (703) 308-2780

OFFICIAL COMMUNICATION

FOR THE PERSONAL ATTENTION OF EXAMINER JUSTIN P. BETTENDORF

CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that the following documentsin re Application of Stephen Allott, Application No. 09/837,897, filed April 18, 2001 for TRANSCONDUCTANCE DEVICE EMPLOYING NATIVE MOS TRANSISTORS is being facsimile transmitted to the Patent and Trademark Office on the date shown below.

Document(s) Attached

1. Transmittal Form (1 p)
2. Request for Reconsideration Under 37 CFR 1.116 Expedited Procedure Examining Group 2817 (4 pp)
3. This Facsimile Transmittal Form (1 p)

Number of pages being transmitted, including this page: 6

Dated: 02/10/03 Eleanor J. Taylor

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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/837,897
Filing Date	April 18, 2001
First Named Inventor	Allott, Stephen
Group Art Unit	2817
Examiner Name	Justin P. Bettendorf
Total Number of Pages in This Submission: 1	Attorney Docket Number: 020408-002000US

ENCLOSURES *(check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☒ Amendment / Reply
  - ☒ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
  - ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Assignment Papers *(for an Application)*
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s)
- ☐ After Allowance Communication to Group
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to Group *(Appeal Notice, Brief, Reply Brief)*
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Other Enclosure(s) *(please identify below):*

  Facsimile Transmittal Form (1 p)

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm and Individual name	Townsend and Townsend and Crew LLP Henry K. Woodward Reg. No. 22,672
Signature	Henry K Woodward
Date	02-10-03

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office, Fax No. (703) 872-9317 on Feb. 10, 2003

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Signature	Eleanor J. Taylor	Date	Feb. 10, 2003

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TOWNSEND and TOWNSEND and CREW LLP

By: Eleanor J. Taylor

REQUEST FOR RECONSIDERATION UNDER 37 CFR 1.116 EXPEDITED PROCEDURE – EXAMINING GROUP 2817

PATENT
Attorney Docket No.: 020408-002000US
Client Ref. No.: PN019-00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Stephen Allott

Application No.: 09/837,897

Filed: April 18, 2001

For: TRANSCONDUCTANCE DEVICE EMPLOYING NATIVE MOS TRANSISTORS

Examiner: Justin P. Bettendorf

REQUEST FOR RECONSIDERATION UNDER 37 CFR 1.116 EXPEDITED PROCEDURE EXAMINING GROUP 2817

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Box AF
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Reconsideration is respectfully requested for the Office Action mailed January 7, 2003, finally rejecting claims 1-17 in the above-identified patent application under 35 U.S.C. 103(a) as being unpatentable over Applicant's prior art figures 1-4 and description thereof in view of Brahmbhatt 4,442,481 for reasons of record in the first Office Action, the Examiner alleging that Brahmbhatt teaches that native MOSFETS are art recognized equivalent to enhancement mode MOSFETS but have a very low threshold voltage. The Examiner has concluded that substituting alleged art-recognized equivalent native MOSFETS as taught by Brahmbhatt in place of generic MOSFETS in the transconductance cell of Applicant's Figure 4 would be a mere substitution of art recognized equivalent MOSFETS.

The Examiner refers to MPEP section 2144.06 that "a suggestion to substitute one equivalent component or process for another is not necessary to render

substitution obvious." The Examiner further refers to *ex parte* Obiaya, 227 U.S.P.Q. 58, 60 (Board of Appeals and Interferences 1985).

This final rejection is respectfully believed to be in error. First, it will be noted that MPEP 2144.06 in referring to *in re* Ruff states that equivalency cannot be based on the mere fact that components at issue are functional or mechanical equivalents. The decision notes that components which are functionally or mechanically equivalent are not necessarily obvious in view of one another.

Moreover, it is respectfully submitted the native transistors and conventional doped channel transistors are **not** functionally equivalent, as will be discussed below.

In the present claims, the prior art recognition of using conventional CMOS transistors having p-doped channel regions and n-doped channel regions is not functionally equivalent to the use of native transistors. Indeed, the use of native transistors in a transconductance element or cell for use in a telecommunications receiver system on a chip is **not** functionally equivalent to using conventional MOS transistors as taught in the prior art, such as disclosed by Johns and Martin, Analog-Integrated Circuit Design, of record in the application. Applicant has recognized a problem with the use of the known transconductance cell due to the adverse effects of source-bulk voltage (VSB) on MOS transistors used in the transconductance cell. Further, control voltage in a gyrator can have a limited dynamic range when using the conventional MOS transistors.

Native transistors have undoped channels and are not equivalent to conventional MOS transistors (CMOS, p-channel, or n-channel) in that the native MOS transistor has a lower threshold voltage V_t which leads to a lower variation of transconductance elements (GM) in a gyrator due to source to bulk voltage variations.

As noted on page four of the specification, the use of a low to zero threshold voltage transistor, a "native" device, **improves** filter performance in the presence of substrate noise. This is described on page 5 of the specification with reference to Figs. 7A-7B.

Further, another advantage of using the native MOS transistor is that the control voltage has more dynamic range, as illustrated in Figs. 8A-8D and as described on page 5 of the specification. Further, the native MOS device has a lower transconductance gain with respect to the transconductance control voltage V_c thus resulting in less jitter of a phase lock loop used to tune a filter, and hence a more stable loop control voltage. Thus a signal processing system on a chip fabricated with transconductance devices employing native MOS transistors can have more accurately controlled cut-off frequencies with reduced substrate noise susceptibility via the VSB voltage.

The transconductance cell for use in a telecommunications receiver system on the chip defined by claims 1-10 and the gyrator as defined by claims 14-17 specifically call out a variable resistance interconnecting nodes of load resistors, the variable transistor resistance comprising a pair of native MOS transistors having low threshold voltage, as illustrated in Figs. 4 and 9 of the drawing.

Further, the method of reducing noise susceptibility due to bulk semiconductor voltage in a system on chip employing gyrators in filter elements as defined by claims 11-13 specifically calls out providing a gyrator cell with resistive loads for a plurality of current sources, the resistive loads including first and second MOS transistors, and connecting a variable resistance between the first and second MOS transistors, the variable resistance comprising two serially connected native MOS transistors having low threshold voltages.

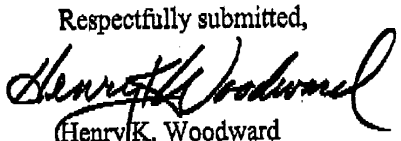
Thus the invention as defined by the claims specifically calls out the use of native MOS transistors, which as described above and disclosed in Applicant's specification offer distinct advantages over the conventional MOS transistors. The use of native MOS transistors in place of the conventional doped channel transistors is obviously not substituting equivalence known for the same purpose as required in MPEP 2144.06. The use of the native transistors offers distinct advantages not recognized in the prior art and overcomes problems in a gyrator associated with adverse effects of source-bulk voltage on MOS transistors. This recognition by Applicant, heretofore unknown in

the prior art, is respectfully believed to be an advancement in the art and a patentable invention.

For the foregoing reasons, it is respectfully submitted that claims 1-17 are patentable under 35 U.S.C. 103(a) over the prior art figures 1-4 in view of Brahmbhatt, and allowance of claims 1-17 is respectfully requested.

Should the Examiner have any questions concerning the present Request for Reconsideration, a telephone call to the undersigned attorney is requested.

Respectfully submitted,



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